REMARKS

In this Preliminary Amendment, Fig. 6 of the drawings has been amended to include features inadvertently missing from the figure. In particular, Fig. 6 has been amended to show a processor 690 and an external device 695. These features are supported in the specification at least on pages 14-16 and by claim 34 as originally filed. The specification also has been amended to include reference characters newly used in Fig. 6 as amended. No new matter has been added.

Additionally, claims 1-77 have been amended to address typographical and grammatical errors, address indefiniteness issues, and generally improve the readability of the claims. The amendments to claims 1-77 herein are not made to overcome any references of record, but are merely clerical in nature. Finally, claims 78-106 have been added herein to further define Applicants' contribution to the art.

An early and favorable action is hereby earnestly solicited.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

The following paragraph beginning at page 14, line 21, has been amended as follows:

A controller 30, as depicted in Figure 6, may be used to execute lighting sequences 20 which have been programmed, designed, or created on a different apparatus. Because the controller 30 may provide a narrower range of functions than the processor used to create the sequence, the controller 30 may contain less hardware and be less expensive than a more complex system which permits authoring, includes a video monitor, or has other auxiliary functionality. The controller 30 may employ any suitable loader interface 610 for receiving a lighting program 20, e.g., an interface for reading a lighting program 20 from a storage medium such as a compact disk, diskette, magnetic tape, smart card, or other device, or an interface for receiving a transmission from another system, such as a serial port, USB port, parallel prt, IR receiver, or other connection for receiving a lighting program 20. In certain embodiments, the lighting program 20 may be transmitted over the Internet. The controller 30 may also include a processor 690 and an interface for communicating with a plurality of lighting units 40.

The following paragraph beginning at page 15, line 17, has been amended as follows:

A controller 30 may include a memory unit, database, or other suitable module 620 for storing a plurality of predetermined stock effects and instructions for converting those effects into a data format, such as DMX, RS-485, or RS-232, suitable for controlling a plurality of lighting units. The memory module 620 may be preconfigured for a set of stock effects, the memory module 620 may receive effects and instructions from the lighting sequence 20, or the memory module 620 may include a preconfigured set of stock effects which can be supplemented by additional effects stored in lighting sequence 20. Preconfiguring the memory module 620 with a set of stock effects permits a reduction in the memory required to store a lighting sequence 20, because the lighting sequence 20 may omit conversion instructions for

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effects preconfigured into the controller 30. In embodiments wherein the lighting sequence 20 includes stock effects designed by the author, suitable instructions may be included in lighting sequence 20 and stored in memory module 620, e.g., upon loading or execution of the lighting sequence 20 by the processor 690.

The following paragraph beginning at page 15, line 31, has been amended as follows:

The controller 30 may include an external interface 650 whereby the controller 30 can receive external signals useful for modifying the execution of the lighting sequence 20. For example, the external interface 650 may include a user interface, which may in turn include switches, buttons, dials, sliders, a console, a keyboard, or any other device, such as a sensor, whereby a user may provide a command or signal to the controller 30 or otherwise influence the execution or output of the lighting sequence 20. The external interface 650 may receive temporal information from one or more chronometers, such as a local time module 660 which functions as a counter for measuring time from a predetermined starting point, such as when the controller 30 is turned on or when the counter is reset, or a date time module 665 which calculates the current date and time. Additionally, the controller 30 may receive commands or signals from one or more external devices 695 or sensors through external input 668. Such devices may be coupled to controller 30 directly, or signals may be received by the controller through an IR sensor or other suitable interface. Signals received by the controller 30 may be compared to or interpreted by a cue table 630, which may contain information related to the various inputs or conditions designated by the author of the lighting sequence 20 to affect the execution or output of the lighting sequence 20. Thus, if the controller 30 compares an input to the cue table 630 and determines that a condition has been satisfied or a designated signal has been received, the controller 30 may then alter the execution or output of the lighting sequence 20 as indicated by the program.

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IN THE CLAIMS

Claims 1-77 are amended as follows:

1. (Amended) A system for preparing a [light] lighting sequence, comprising:

[an authoring] a display interface [displaying] adapted to display first information representative of a plurality of lighting effects[,]; and

a processor coupled to the display interface and supporting a sequence authoring [module] interface adapted to permit a user to select at least one lighting effect[,] and at least one lighting unit to execute the at least one selected lighting effect, [a start time for the lighting effect, and a stop time for the lighting effect] based on the displayed first information.

2. (Amended) The system of claim 1, [further comprising] wherein:

[a lighting set-up module] the sequence authoring interface is adapted to receive second information representative of an arrangement of a plurality of lighting units, and

[a set-up interface] the display interface is adapted to visually display a first representation of the arrangement of the plurality of lighting units based on the received second information.

3. (Amended) The system of claim 2, wherein[, upon initiation of a playback function,] the [set-up] display interface [displays a] is adapted to display a second representation of the at least one selected lighting effect[, as defined by a start time and a stop time associated therewith, on a portion thereof defined by a lighting unit associated with selected lighting effect], based on the first representation of the arrangement of the plurality of lighting units, upon execution of the lighting sequence.

4. (Amended) The system of claim [2] 1, wherein the at least one lighting unit is one of a plurality of lighting units, wherein each lighting unit of the plurality of lighting units is associated with a unique address, and wherein the sequence authoring interface is adapted to permit the user to select an address of the at least one lighting unit.

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5. (Amended) The system of claim [2] 1, wherein the [plurality of] at least one lighting [units include an] unit includes at least one LED lighting unit capable of emitting light of any of a range of different colors, and wherein the sequence authoring interface is adapted to permit the user to select at least one color of the light emitted by the at least one LED lighting unit.

6. (Amended) The system of claim 1, wherein the [authoring] display interface [includes] is adapted to display a grid, wherein [a plurality of] the at least one lighting [units are] unit is represented along one axis of the grid, and wherein time is represented along a second axis of the grid.

7. (Amended) The system of claim [5] 6, wherein the [authoring] display interface is adapted to visually [represents] represent the at least one selected lighting effect on a region of the grid defined by [a] the at least one lighting unit[, start time, and stop time associated with the selected lighting effect].

8. (Amended) The system of claim 1, [further comprising a recorder] wherein the sequence authoring interface is adapted to store user selections on [an electronic] at least one storage medium.

9. (Amended) The system of claim 1, wherein the sequence authoring [module includes a coloring unit] interface is adapted to permit [a] the user to select [a] at least one color for the at least one selected lighting effect.

10. (Amended) The system of claim 1, wherein the sequence authoring [module includes a coloring unit] interface is adapted to permit [a] the user to select a starting color and an ending color for the at least one selected lighting effect.

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11. (Amended) The system of claim 1, wherein the sequence authoring [module includes a transitioning unit] interface is adapted to permit [a] the user to select a transition effect for a transition between a first lighting effect and a second lighting effect.

12. (Amended) The system of claim 1, wherein the sequence authoring [module includes a prioritizing unit] interface is adapted to permit [a] the user to [determine] specify a priority for a first lighting effect which shares a temporal overlap with a second lighting effect.

13. (Amended) The system of claim 1, wherein the sequence authoring [module includes an intensity unit] interface is adapted to permit [a] the user to [determine] specify a brightness for the at least one selected lighting effect.

14. (Amended) The system of claim 1, wherein the sequence authoring [module includes a cue unit] interface is adapted to permit the user to provide instructions to [start] execute and optionally alter the at least one selected lighting effect based upon [receiving an] at least one external stimulus.

15. (Amended) The system of claim 1, wherein the sequence authoring [module includes a motion unit] interface is adapted to permit the user to [determine] specify a motion of [a] the at least one selected lighting unit.

16. (Amended) The system of claim 1, [further comprising a lighting effect creator] wherein the sequence authoring interface is adapted to permit [a] the user to design at least one user-composed lighting [effects using the sequence authoring module and to include the user-designed effects on the authoring] effect, and wherein the display interface is adapted to display information representative of the at least one user-composed lighting effect.

17. (Amended) A method for preparing a lighting sequence capable of being executed by a [processor] controller, comprising [providing a processor interface including] acts of:

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displaying first information representative of a plurality of lighting effects[, receiving information representative of a lighting unit, receiving information representative of a first];

selecting at least one lighting effect [to be executed by the lighting unit, receiving information representative of a start time for the first lighting effect, and receiving information representative of a stop time for the first] for the lighting sequence, based on the displayed first information; and

selecting at least one lighting unit to execute the at least one selected lighting effect.

18. (Amended) The method of claim 17, further comprising acts of:

receiving second information representative of an arrangement of a plurality of lighting units, and

[providing a processor interface representative] displaying a first representation of the arrangement of the plurality of lighting units based on the received second information.

19. (Amended) The method of claim 18, further comprising an act of visually representing the [first] at least one selected lighting effect [on the portion of the interface representative of an arrangement of a plurality of lighting units as defined by the lighting unit, the start time, and the stop time], based on the first representation of the arrangement of the plurality of lighting units, upon execution of the lighting sequence.

20. (Amended) The method of claim 17, further comprising an act of:

[repeating the method for a] selecting a second lighting unit; and

selecting one of the at least one selected lighting effect and another lighting effect for execution by the second lighting unit.

21. (Amended) The method of claim 17, [wherein providing a processor interface includes providing an interface which displays] further comprising an act of displaying a grid, wherein [a plurality of] the at least one lighting [units are] unit is represented along one axis of the grid and wherein time is represented along a second axis of the grid.

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22. (Amended) The method of claim [20] 21, further comprising an act of visually representing the [first] at least one selected lighting effect on [the] a region of the grid defined by the at least one lighting unit[, the start time, and the stop time].

23. (Amended) The method of claim [23] 22, further comprising an act of storing [the received information] user selections on [an electronic] at least one storage medium.

24. (Amended) The method of claim 17, further comprising an act of [receiving information representative of a] selecting at least one color for the [first] at least one selected lighting effect.

25. (Amended) The method of claim 17, [further comprising receiving information representative of] wherein the at least one selected lighting effect includes a first lighting effect associated with the at least one lighting unit, and wherein the method further comprises acts of:

selecting a second lighting effect [to be executed by the lighting unit, receiving information representative of a start time for the second lighting effect, and receiving information representative of a stop time for the second lighting effect] for the lighting sequence, based on the displayed first information.

26. (Amended) The method of claim 25, further comprising [receiving information representative of] an act of selecting a transition effect between the first lighting effect and the second lighting effect.

27. (Amended) The method of claim 25, further comprising [receiving information representative of] an act of determining a priority for [the second] multiple selected lighting [effect] effects.

28. (Amended) The method of claim 17, further comprising [receiving information representative of] an act of specifying a brightness for the [first] at least one selected lighting effect.

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29. (Amended) The method of claim 17, wherein [receiving information representative of a lighting unit includes receiving information representative of a plurality of lighting units, and receiving information representative of a first lighting effect includes receiving information representative of a first lighting effect to be executed by the] the act of selecting at least one lighting unit to execute the at least one selected lighting effect includes an act of selecting a plurality of lighting units to execute the at least one selected lighting effect.

30. (Amended) The method of claim 17, wherein [receiving information representative of a lighting unit includes receiving information representative of an] the act of selecting at least one lighting unit to execute the at least one selected lighting effect includes an act of selecting at least one LED lighting unit capable of emitting light of any of a range of colors.

31. (Amended) The method of claim 17, [wherein receiving information representative of a start time includes receiving] further comprising an act of providing instructions to [start] execute and optionally alter the [first] at least one selected lighting effect based upon [receiving an] at least one external stimulus.

32. (Amended) The method of claim 17, wherein [receiving information representative of a] the act of selecting at least one lighting unit includes [receiving] an act of selecting an address of the at least one lighting unit.

33. (Amended) The method of claim 17, further comprising [receiving information representative of a first] an act of specifying a motion of the at least one selected lighting unit.

34. (Amended) [A system] An apparatus for controlling [a plurality of lighting units] at least one lighting unit, comprising:

a data interface for receiving instructions for controlling [a plurality of lighting units,] the at least one lighting unit;

a signal interface for receiving at least one external [signals,] signal;

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a processor for [converting] processing said instructions [to] to provide a data stream [and for], the processor being capable of altering the [conversion] processing of said instructions based on the at least one external [signals received, and] signal; and

a data output for transmitting the data stream to [a plurality of lighting units] the at least one lighting unit.

35. (Amended) The [system] apparatus of claim 34, [wherein said signal interface includes a mechanical interface for receiving an input] in combination with at least one external device coupled to the signal interface to provide the at least one external signal.

36. (Amended) The [system] apparatus of claim 34, wherein said signal interface includes a port for receiving an electromagnetic signal.

37. (Amended) The [system] apparatus of claim 34, wherein said data output includes a port for transmitting data to a mechanical device other than a lighting unit.

38. (Amended) The [system] apparatus of claim 34, wherein said data output includes a port for transmitting data to a device for reproducing an audio signal.

39. (Amended) The [system] apparatus of claim 34, wherein said data output includes a port for transmitting data to a device for reproducing a video image.

40. (Amended) The [system] apparatus of claim 34, wherein said data interface is a data connection for receiving the instructions from another processor.

41. (Amended) The [system] apparatus of claim 40, wherein said data connection comprises one of an infrared port, a serial port, a parallel port, an RF port, a wireless port [or] and a USB port.

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42. (Amended) The [system] apparatus of claim 34, wherein said data interface is capable of reading the instructions from a second storage medium.

43. (Amended) The [system] apparatus of claim 42, wherein said at least one storage medium and said second storage medium each is selected from one of a magnetic disk, magnetic tape, a smart card, volatile solid state memory, non-volatile solid state memory and a compact disk.

44. (Amended) The [system] apparatus of claim 34, further comprising:

a database to store directions for converting predetermined lighting effects having parameters associated therewith into data suitable for controlling [a plurality of lighting units] the at least one lighting unit.

45. (Amended) The [system] apparatus of claim 34, further comprising:

a memory module for storing information representative of effects being executed by [a plurality of lighting units] the at least one lighting unit.

46. (Amended) The [system] apparatus of claim 34, further comprising:

a timing mechanism for measuring intervals of time.

47. (Amended) The [system] apparatus of claim 34, further comprising:

a first timing mechanism for measuring elapsed time[,]; and

a second timing mechanism for determining the date and time of day.

48. (Amended) The [system] apparatus of claim 34, wherein the [data output includes a color mechanism for setting the color of an] at least one lighting unit includes at least one LED lighting unit capable of emitting light of any of a range of colors, and wherein the processor is adapted to set a color of the at least one LED lighting unit.

49. (Amended) A method for controlling [a plurality of lighting units] at least one lighting unit, comprising acts of:

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receiving instructions for controlling [a plurality of lighting units,] the at least one lighting unit;

[receiving] monitoring at least one input for at least one external [signals,] signal;

[converting] processing said instructions to provide a data stream;

altering the processing of said instructions based on the at least one external [signals received,] signal; and

transmitting the data stream to [a plurality of lighting units] the at least one lighting unit.

50. (Amended) The method of claim 49, wherein [receiving external signals] the act of monitoring at least one input includes [receiving an input from a mechanical interface] an act of monitoring at least one user interface for the at least one external signal.

51. (Amended) The method of claim 49, wherein [receiving external signals] the act of monitoring at least one input includes an act of [receiving] monitoring the at least one input for an electromagnetic signal.

52. (Amended) The method of claim 49, wherein the act of transmitting the data stream includes an act of transmitting data to a mechanical device other than a lighting unit.

53. (Amended) The method of claim 49, wherein the act of transmitting the data stream includes an act of transmitting data to a device for reproducing an audio signal.

54. (Amended) The method of claim 49, wherein the act of transmitting the data stream includes an act of transmitting data to a device for reproducing a video image.

55. (Amended) The method of claim 49, wherein the act of receiving instructions includes an act of receiving the instructions from another processor.

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56. (Amended) The method of claim [55] 49, wherein the act of receiving instructions [from another processor] includes [using] an act of receiving the instructions via an infrared port, a serial port, a parallel port, or a USB port.

57. (Amended) The method of claim [40] 49, wherein the act of receiving instructions includes an act of reading the instructions from a storage medium.

58. (Amended) The method of claim [58] 57, wherein the act of reading the instructions from a storage medium includes an act of reading data from [a medium selected from] one of a magnetic disk, magnetic tape, a smart card, and a compact disk.

59. (Amended) The method of claim 49, wherein the act of receiving instructions includes an act of receiving a plurality of lighting effects having parameters associated therewith.

60. (Amended) The method of claim 59, further comprising an act of:

utilizing directions for converting predetermined lighting effects to convert said plurality of lighting effects into data suitable for controlling [a plurality of lighting units] the at least one lighting unit.

61. (Amended) The method of claim 49, further comprising an act of:

storing information representative of effects being executed by [a plurality of lighting units] the at least one lighting unit in a transient memory.

62. (Amended) The method of claim 49, wherein [receiving external signals] the act of monitoring at least one input includes an act of [receiving data from] monitoring a timing mechanism for the at least one external signal.

63. (Amended) The method of claim 49, wherein [receiving external signals] the act of monitoring at least one input includes an act of [receiving data from] monitoring a first timing

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mechanism for measuring elapsed time, and a second timing mechanism for determining the date and time of day.

64. (Amended) The method of claim 49, wherein [receiving external signals] the act of monitoring at least one input includes an act of [receiving data from] monitoring a sensor for the at least one external signal.

65. (Amended) The method of claim 49, wherein [receiving external signals] the act of monitoring at least one input includes an act of receiving an alarm signal.

66. (Amended) The method of claim 49, wherein the act of transmitting the data stream includes an act of setting [the] a color of an LED lighting unit capable of emitting light of any of a range of colors.

67. (Amended) The method of claim 49, wherein [converting said] the act of altering the processing of the instructions [to a data stream] based on the at least one external [signals received] signal includes an act of repeating an effect until [an] the at least one external signal is received.

68. (Amended) The method of claim 49, wherein [converting said] the act of altering the processing of the instructions [to a data stream] based on the at least one external [signals received] signal includes an act of modifying [the] a rate of a lighting sequence.

69. (Amended) The method of claim 49, wherein [converting said] the act of altering the processing of the instructions [to a data stream] based on the at least one external [signals received] signal includes an act of switching from a high priority effect to a low priority effect.

70. (Amended) The method of claim 49, wherein [converting said] the act of altering the processing of the instructions [to a data stream] based on the at least one external [signals received] signal includes an act of interrupting a lighting sequence to execute a different effect.

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71. (Amended) [A] The method [for controlling a plurality of lighting units, comprising] of claim 49, wherein:

the act of receiving instructions [including] includes an act of receiving a primary lighting effect and a secondary lighting effect, the secondary lighting effect designated to be executed instead of the primary lighting effect upon a predetermined condition[, sending instructions to a];

the act of processing the instructions includes an act of providing the data stream such that the at least one lighting unit [to execute] executes the primary lighting effect[,];

the act of monitoring at least one input includes an act of receiving a signal indicative of the predetermined condition[, and sending instructions to]; and

the act of altering the processing of the instructions includes an act of providing the data stream such that the at least one lighting unit [to execute] executes the secondary lighting effect.

72. (Amended) [A] The method [for controlling a plurality of lighting units, comprising] of claim 49, wherein:

the act of receiving instructions includes an act of receiving instructions for executing [a timed] at least one sequence of lighting effects[,];

the act of transmitting the data stream includes an act of executing the at least one sequence of lighting effects utilizing [a plurality of lighting units, receiving an external signal,] the at least one lighting unit; and

the act of altering the processing of the instructions includes an act of altering the execution of the at least one sequence of lighting effects.

73. (Amended) The method of claim 72, wherein the act of altering the execution of the at least one sequence of lighting effects includes an act of altering [the] a rate of the [timed] at least one sequence.

74. (Amended) The method of claim 72, wherein:

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the act of receiving instructions includes an act of receiving instructions for executing at least two sequences of lighting effects;

the act of transmitting the data stream includes an act of executing a first sequence of the at least two sequences of lighting effects utilizing the at least one lighting unit; and

the act of altering the execution of the at least one sequence of lighting effects includes an act of executing a different sequence of the at least two sequences of lighting effects.

75. (Amended) The method of claim 72, wherein the act of altering the execution of the at least one sequence of lighting effects includes an act of pausing during the at least one sequence.

76. (Amended) The method of claim 72, wherein the act of altering the execution of the at least one sequence of lighting effects includes an act of changing [the] a brightness of [the] light emitted by the [plurality of lighting units] at least one lighting unit.

77. (Amended) The method of claim 72, wherein the act of altering the execution of the at least one sequence of lighting effects includes an act of changing [the] a color of [the] light emitted by the [plurality of lighting units] at least one lighting unit.

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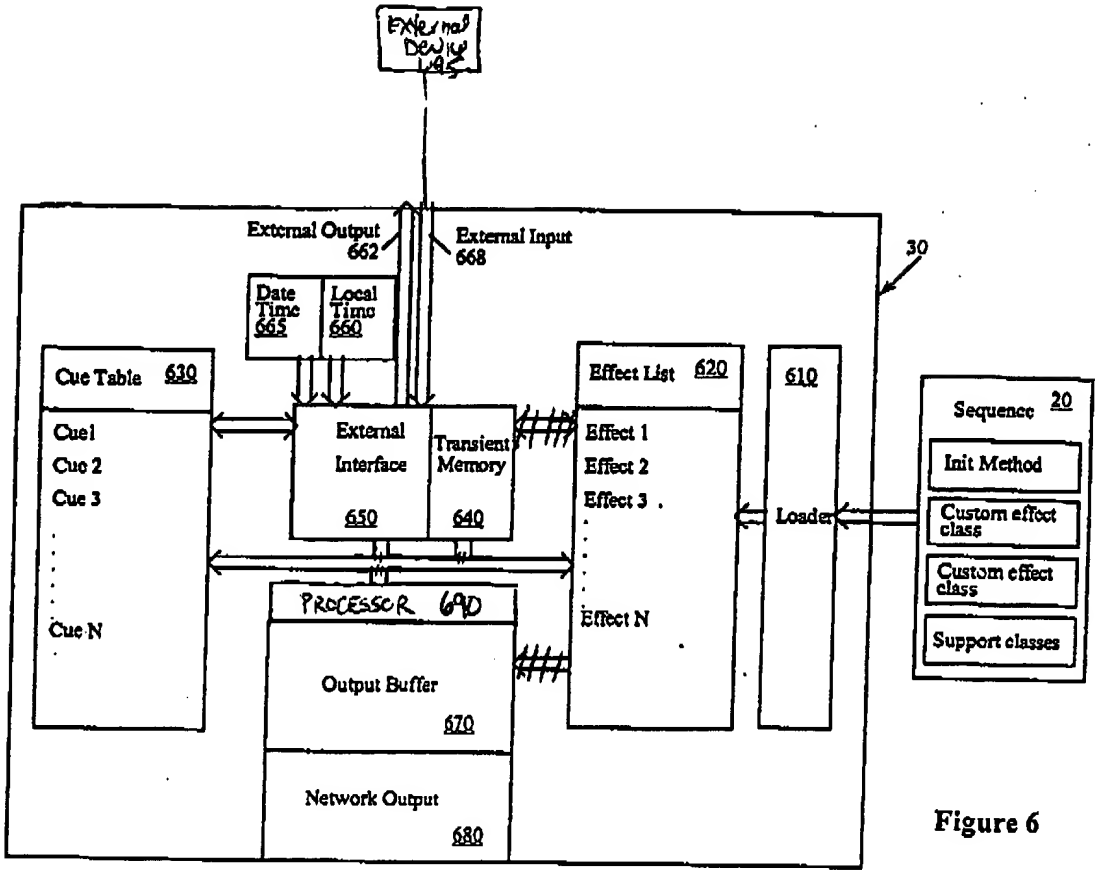

Figure 6

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